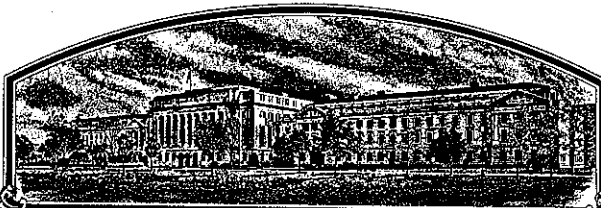


No.

8500052



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Nebraska and USDA-ARS

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, (THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,) TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS SEED OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS PROVIDED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.)

WHEAT

'Siouxland'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of March in the year of our Lord one thousand nine hundred and eighty-eight.

Attest:

Kenneth H. Hays
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
WAREHOUSE & SEED DIVISION

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S) Board of Regents, Univ. of Nebraska and USDA/ARS		2. TEMPORARY DESIGNATION NE78668		3. VARIETY NAME Siouxland	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) Lincoln, NE 68583 Washington, DC 20250		5. PHONE (Include area code) 402/472-7211 202/447-3656		FOR OFFICIAL USE ONLY PVPO NUMBER 8500052	
6. GENUS AND SPECIES NAME Triticum aestivum L.		7. FAMILY NAME (Botanical) Gramineae		FILING DATE 1/28/85 TIME 2:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
8. KIND NAME Hard Red Winter Wheat		9. DATE OF DETERMINATION July 1978		FEES RECEIVED AMOUNT FOR FILING \$ 1,800 DATE 1/28/85 AMOUNT FOR CERTIFICATE \$ 200.00 DATE Feb. 29, 1988	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation and U.S. Government Agency				12. DATE OF INCORPORATION	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Nebraska and D.C.					
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. I. T. Omtvedt, Dean & Director Nebraska AES, University of Nebraska Lincoln, NE 68583 Dr. T. B. Kinney, Jr., Administrator, USDA/ARS 302A Administration Building Washington, DC 20250 PHONE (Include area code):					
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED					
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.) d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of the Variety e. <u>Statement of Applicant's Ownership</u>					
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input checked="" type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input type="checkbox"/> No					
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> Foundation <input checked="" type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified		
18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? N/A 1st Application <input type="checkbox"/> Yes (If "Yes," give date) <input type="checkbox"/> No					
19. HAS THE VARIETY BEEN OFFERED FOR SALE OR MARKETED IN THE U.S. OR OTHER COUNTRIES? U.S., August 1984 <input checked="" type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input type="checkbox"/> No					
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT Irvin T. Omtvedt, Director Agricultural Experiment Station				DATE 12/17/84	
SIGNATURE OF APPLICANT T. B. Kinney				DATE JAN 28 1985 1	

EXHIBIT A

8500052

Origina and Breeding History of Siouxland

Pedigree: (Warrior*5/Agent)*2/Kavkaz

Warrior*5/Agent is C068F6635. Kavkaz is an introduction from the USSR.

Date of Cross: Cross 72728, 1972. Backcross of Warrior*5/Agent/Kavkaz to Warrior*5/Agent.

Place: Department of Agronomy, Nebraska AES, Lincoln, NE.

Breeding System: mass-pedigree

The breeding history of Siouxland is summarized in Table 1. The decision to release NE78668 as SIOUXLAND was made by the Nebraska Agricultural Experiment Station on January 25, 1984. Public release of information on Siouxland as a cultivar occurred on May 15, 1984*. The release was cooperative with the Texas Agricultural Experiment Station and the North Central Region, U.S. Department of Agriculture/Agricultural Research Service.

Breeder seed of NE78668 was seeded in the fall of 1983 for increase of breeder seed and for the production of foundation seed in 1984. In 1984, the Nebraska Foundation Seed Division produced 2,660 bushels of Siouxland. Most of this seed was allocated to Nebraska certified seed producers.

* release statement attached.

EXHIBIT A

Table 1. Breeding history of Siouxland hard red winter wheat.

Year	Generation	Nursery	Disposition
1972	F ₀	Backcross 72728.	To field and greenhouse for F ₁ seed production.
1973	F ₁	Field and greenhouse Mead and Lincoln, NE.	Cross harvested in bulk and advanced to F ₂ bulk-hybrid nursery.
1974	F ₂	F ₂ bulk-hybrid nursery, Mead, NE.	Advanced to F ₃ bulk-hybrid nursery.
1975	F ₃	F ₃ bulk-hybrid nursery, Mead, NE.	Heads selected and advanced to head-row nursery.
1976	F ₄	Head-row nursery.	Rows selected and advanced to preliminary observation nursery.
1977	F ₅	Preliminary observation nursery.	Line selected and advanced to observation nursery at multiple locations in Nebraska.
1978	F ₆	Multiple-station observation nursery in Nebraska.	Plot 668 recognized as having merit. Assigned NE No. 78668 and advanced to Nebraska Triplicate Yield Nursery.
1979	F ₇	Nebraska Triplicate Yield Nursery (all Nebraska testing locations).	Advanced to Nebraska Intrastate Yield Nursery.
1980	F ₈	Nebraska Intrastate Yield Nursery (all Nebraska testing locations).	Continued in Nebraska Intrastate Yield Nursery. Entered in Southern Regional Performance Nursery (SRPN).
1981	F ₉	Nebraska Intrastate Yield Nursery, SRPN.	Continued in Nebraska tests and advanced to Outstate Tests.
1982	F ₁₀	Nebraska Intrastate Yield Nursery, SRPN, and Out-state Tests.	Continued in all tests. Initial breeder seed increase.
1983	F ₁₁	Continued in state and regional tests. Breeder seed increase and grain produced for Large-scale Milling & Baking evaluation.	Continued in state tests. Entered in Northern Regional Performance Nursery (NRPN). Large-scale Milling & Baking evaluation. Production of foundation seed.
1984	F ₁₂	Continued in tests. Production of foundation seed.	PI No. 483469 assigned. Released as Siouxland to growers on May 15, 1984.

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
DEPARTMENT OF AGRONOMY

'SIOUXLAND' HARD RED WINTER WHEAT

History

Siouxland (PI483469) is an increase of a hard red winter F_3 derived line from the 1972 backcross of Warrior*5/Agent//Kavkaz to Warrior*5/Agent. Warrior*5/Agent is 68F6635 developed by the Colorado Agricultural Experiment Station. Siouxland was identified as a line in 1978 and tested as NE78668 in Nebraska yield trials beginning in 1979, and in the Southern Regional Performance Nursery from 1981 through 1983.

Contributions

Siouxland originated from cooperative research of the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture. The research was supported in part by grants from the Nebraska Wheat Development, Utilization, and Marketing Board. J. W. Schmidt, V. A. Johnson (USDA-ARS), P. J. Mattern, and A. F. Dreier of the Department of Agronomy, R. E. Elmore, P. T. Nordquist, and L. A. Nelson of the outstate stations identified the agronomic and quality characteristics of this cultivar. K. F. Finney and M. D. Shogren (USDA-ARS) and A. B. Ward (Kansas State University) contributed to the quality evaluation. D. V. McVey and J. H. Hatchett (USDA-ARS) evaluated this cultivar for rust and Hessian fly reaction, respectively.

Area of Adaptation

Siouxland has performed well statewide but would be most useful in areas where leaf diseases are often prevalent.

Description

Siouxland is red-grained, white-glumed, awned cultivar. It is similar in height to Centurk 78 but lodges considerably less. It is similar to or sometimes earlier in maturity than Centurk 78. Grain of Siouxland is similar to that of Centurk 78 in bushel weight but has heavier kernel weight. It has been much higher yielding than Centurk 78 in Nebraska yield tests. It is as winterhardy or hardier than Centurk 78.

During the testing period, Siouxland has been resistant to mildew, leaf and stem rust and susceptible to soilborne and wheat streak mosaic viruses. It has exhibited less leaf disease than any other cultivars in Nebraska tests. It is susceptible to Hessian fly attack.

The bread baking characteristics of Siouxland are similar to those of Scout 66 but dough development time as measured by the mixograph is intermediate between those of Scout 66 (mellow gluten) and Centurk 78 (strong gluten). It is similar to them in grain protein content and milling yield.

Seed Availability

Foundation seed of Siouxland is being produced in 1984 by the Nebraska Foundation Seed Division and should be available to eligible certified seed producers after the 1984 harvest.

Seed Classes

Seed classes designated by the Nebraska Agricultural Experiment Station will be breeder, foundation, registered, and certified. Siouxland will be submitted for registration and plant variety protection under P.L. 91-577 with the certification option.

Cultivar Release Information

Informational publicity pertaining to the Siouxland cultivar may be released on May 15, 1984.

Approval

D. P. McHill
Interim Head, Department of Agronomy

January 26, 1984
(date)

Ed. Johnson
Head, Department of Entomology

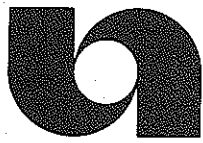
Jan. 31, 1984
(date)

Arvid Vidaver
Head, Department of Plant Pathology

Feb. 1, 1984
(date)

Luvin T. Oatveit
Director, Nebraska Agricultural Experiment Station

2/6/84
(date)



University of
Nebraska
Lincoln

Institute of Agriculture and Natural Resources

Department of Agronomy
279 Plant Sciences
Lincoln, NE 68583-
(402) 472-2811



April 23, 1984

SUBJECT: Release of NE78668, P.I. 483469, Hard Red Winter Wheat
as 'SIOUXLAND'

TO: Experiment Station Directors, and Department of Agronomy
Chairmen, North Central Region, and the following additional
states: Arizona, California, Colorado, Idaho, Montana,
Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah,
Washington, and Wyoming

FROM: D. W. Nelson, Head *Daniel W. Nelson*

Attached is a copy of the release agreement pertaining to 'SIOUXLAND'
hard red winter wheat. The Nebraska Agricultural Experiment Station,
the Texas Agricultural Experiment Station, and the North Central Region,
Agricultural Research Service, U.S. Department of Agriculture collaborated
in this release. The release date is May 15, 1984. Please bring this
to the attention of your wheat breeders and your regional seed practices
committee representative.

The intention to increase and release this hard red winter wheat and
the availability of seed for increase or testing was brought to your
attention in a memo dated August 25, 1983. Foundation seed of this
cultivar will be available from the Foundation Seed Division, University
of Nebraska, 3115 N. 70th Street, Lincoln, NE 68507.

xc: C. F. Murphy
D. H. Smith Jr.
Mary N. Greenwood
F. W. McLaughlin
W. T. Schapaugh

6

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA
LINCOLN, NEBRASKA

and

TEXAS AGRICULTURAL EXPERIMENT STATION
TEXAS A AND M UNIVERSITY
COLLEGE STATION, TEXAS

and

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTH CENTRAL REGION
WASHINGTON, DC

RELEASE OF 'SIOUXLAND' (P.I. 483469) HARD RED WINTER WHEAT

The Nebraska Agricultural Experiment Station, the Texas Agricultural Experiment Station, and the U.S. Department of Agriculture, Agricultural Research Service, North Central Region, agree to release a new hard red winter wheat cultivar to certified growers. P.I. 483469, known also as NE78668, will be released as 'Siouxland'. Siouxland was developed cooperatively by the Nebraska Agricultural Experiment Station and the USDA/ARS, North Central Region. The development was supported in part by grants from the Nebraska Wheat Development, Utilization and Marketing Board.

Siouxland is an increase of a hard red winter wheat F_3 -derived line from the 1972 backcross of Warrior*5/Agent//Kavkaz to Warrior*5/Agent. Warrior*5/Agent (68F6635) was developed by the Colorado Agricultural Experiment Station. Kavkaz is an introduction from the USSR. Siouxland was identified as a line in 1978 and tested as NE78668 in Nebraska yield tests beginning in 1979, in the Southern Regional Performance Nursery in 1981-1983 and in the Northern Regional Performance Nursery in 1984.

Siouxland is an awned, white-glumed cultivar similar in appearance and plant height to Centurk 78 but Siouxland has much shorter beaks. Siouxland is slightly earlier maturing but probably more winterhardy than Centurk 78, superior in lodging resistance and kernel weight but similar in bushel weight. It has been much more productive in grain yield.

Siouxland has had a resistant reaction to mildew, leaf rust and stem rust in field tests. It is susceptible to soilborne wheat mosaic and wheat streak mosaic viruses and to Hessian fly attack.

The milling and baking properties of Siouxland are similar to those of Scout 66, with mellow dough characteristics as measured by the mixograph. It is similar to Scout 66 in grain protein content at comparable grain yields.

Breeder seed of Siouxland will be maintained by the Nebraska Agricultural Experiment Station. Foundation seed will be available from the Foundation Seed Division, Department of Agronomy, University of Nebraska, Lincoln, NE 68583. The U.S. Department of Agriculture will not have seed for distribution.

Siouxland will be submitted for registration and variety protection under P.L. 91-577 with the certification option.

The proposed release date is May 15, 1984. Each agency involved in this agreement may make news releases it considers appropriate on or after that date.

Irvin T. Oentvedt *by DTH*
Director, Nebraska Agricultural Experiment Station

3/7/84
(date)

W. C. Bule
Director, Texas Agricultural Experiment Station

MAR 27 1984
(date)

T. B. Kenney
Administrator, U.S. Department of Agriculture,
Agricultural Research Service

APR 13 1984
(date)

Exhibit A: addendum

Siouxland appears stable and uniform through six generations of selfing and during our seed increase program. Less than 1% of the plants were rogued from foundation fields in 1984. Less than 0.05% (1 in 2000) variant plants (taller height) may be encountered in subsequent generations.

Exhibit B: addition

Siouxland is most similar to Scout 66, but it can be easily distinguished by the following characteristics:

--In comparable tests, beaks of Siouxland were only 1.7 mm long compared to beaks of 2.2 mm long for Scout 66.

--Siouxland is much more lodging resistant than Scout 66 (see Table 1).

--Siouxland is more resistant to leaf rust than is Scout 66 (see Table 2).

--Siouxland is more resistant at the seedling stage to stem rust than is Scout 66. Siouxland is resistant to all physiological races of stem rust in the seedling stage (See Table 3).

EXHIBIT B

Novelty Statement for Siouxland

The Siouxland cultivar is a hard red winter wheat similar in height and maturity to Scout 66. It is as hardy or more winterhardy than Scout 66. It differs from Scout 66 in disease reaction.

Characteristics of Siouxland are:

1. Awned, very short beaked, white chaffed hard red winter wheat. In comparable tests, beaks of Siouxland were only 1.7 mm long compared to 2.2 mm for Scout 66.
2. Plant height (slightly shorter) and maturity similar to those of Scout 66. Coleoptile length similar to that of Scout 66.
3. Lodging resistance similar to that of Vona and much superior to that of Scout 66.
4. Highly resistant to mildew (Scout is intermediate). Inherited from Kavkaz. Based on seedling rust tests, Siouxland has leaf rust resistance genes LR24 and LR26.
5. Resistant to leaf rust in field tests.
6. Resistant seedling reaction (2=) to all physiological races of stem rust to which it has been tested. Stem rust resistance genes expected to account for this are SR24 and SR31. Siouxland appears to be unique in having the Agent translocation from Agropyron that has genes LR24 and SR24 and the rye translocation from Kavkaz that has LR26, SR31, and mildew resistance.
7. Susceptible to wheat soilborne mosaic virus and wheat streak mosaic virus.
8. Susceptible to Hessian fly.
9. Dough handling characteristics similar to those of Scout 66 (mellow gluten type).

Table 1. Lodging Values (%) in Nebraska Trials where lodging was present.

Year	Siouxland	Scout 66	No. of Locations
1982	25	38	4
1983	18*	87	5
1984	3*	60	5
1985	5	22	4
1986	5*	56	6
1987	9*	37	10

*significantly different ($p < 0.05$) from Scout 66. In 1982 and 1985, statistical comparisons over all locations were not made. Where statistical comparisons were made within locations and lodging was important, Siouxland had better lodging values.

Table 2. Leaf rust reactions in Nebraska Trials where leaf rust was present.

Year	Siouxland	Scout 66	No. of Locations
1983	trace	70S	2 ¹
1985	0	50S	1 ¹
1986	1.0*	3.8	Clay County ²
	trace	90S	Saunders County ¹
1987	12*	28	Clay County ¹

*significantly different ($p < 0.05$) from Scout 66.
Statistical comparisons were made at Clay County only.

¹ Leaf rust severity measured on a 0-99 scale where 0 is highly resistant and 99 is highly susceptible. A letter following the value indicates pustule reaction type (S = susceptible).

² Leaf rust severity measured on a 1-4 scale with 1 being highly resistant and 4 being highly susceptible.

Table 3. Stem rust resistance in the seedling stage to various stem rust cultures. Data provided by Dr. D. McVey, USDA Cereal Rust Laboratory.

	Cultures						
	QFBS	QSHS	RHRS	RKQS	RTQQ	TNMH	TNMK
Scout 66	2,S*	2	S	S	;	0;	S
Siouxland	2=	2=	2=	2=	2=	2=	2=

* Reactions are measured on a scale where 0 means no pustule, 0; means few and small pustules with necrosis, ; means small pustules with necrosis, 2= means small pustule which will not enlarge with time (may be considered similar to slow rusting, it will be field resistant), and S means large pustules with no chlorosis or necrosis (complete susceptibility)

Seedling Reaction of the 1981 Uniform Southern Hard Red Winter Wheat Performance Nursery to *Puccinia graminis* f. sp. *tritici* (by D. V. McVey, Cereal Rust Laboratory, ARS, USDA, University of Minnesota, St. Paul, MN).

Entry Cultivar No. or sel.		Reaction produced by isolates							Speculative Sr gene
		74-4-1A	72-21-1409	69-21-399	72-00-1370	72-00-53A	74-14-504C	72-25-639D	
		158-2		151		11-32-113			
		TNMH	TNMK	QSHS	QFBS	RTQQ	RPQQ	RKQS	
1.	Kharkof	S	S	2,S	2+	S	S	S	
2.	Scout 66	:	S	S	S	:1	:	S	17
3.	Sage	:	2	2	2	:1-	:	2	17,24
4.	NE 74649	:	:	S	:	:	:	S	6,17
5.	NE 75424	:	:	2	0;	:1,2	:	2,S	6,9a,17
6.	NE 77682 (CENTURA)	:	:	2	0;	:	:	2	6,17,24
7.	NE 78668 (Siouxland)	2-	2-	2	2-	2	2	2-	24 & or 31
8.	KS 75210	S	S	S	S	S	S	S	
9.	KS 79H70	:	:	0	2=	0:,2	:	-	6,Tt-1,24
10.	KS 79H69	:	:	0	:1,2=	2	:	2	6,Tt-1,24
11.	OK 78002	2-	2	2	2=	2	2	2=	
12.	OK 78047	2	2-	2	2=	2-	12-	2=	
13.	OK 754615A	S	S	S	S	S	S	S	
14.	OK 80099	2	2-	2	:1,2=	:1,2-	2-:,	2-	
15.	OK 77198	:	S	2	2	:	:	S	17,7b
16.	TX 71A889	:	S,;	2	0;	:	:	-	17,Seg.6
17.	TX 78V2154	2	2	2	2	23	23	2	24
18.	TX 78V3562	2	S	2	2	S,X ⁻ N	S	2	
19.	TX 79A2729	S	S	2	2	S	2	2	
20.	TX 73V862	:	:	2	:	:1,23CN	:	2CN	6,17
21.	TX 73V1241	:1	S	2	S	:1N	:1	S	17
22.	CO 778766	S	S	S	S	S	S,;1	S	
23.	CO 778785	:	:	S	:	S	:	S	6
24.	CO 779274	S	S	S	S	S	S	23C	
25.	CO 710125	S	S	S	2	2	2	2+	
26.	CO 786741	:	:	S	0;	S	:	2	6
27.	CO 786747	0;	:	S	0;	X	:	S	6
28.	NK 77W4036	:1	S	S	2	0;	:1N	S	17
29.	NK 77W4430	:	:	2-	:	:	:	12C	6,17
30.	NAPB 200	:	:	2	:	23	:	23	6,24
31.	NAPB 201	:	:	S	:	S	:	S	6
32.	NAPB 203	:	:	S	:	S	:	S	6
33.	NAPB 204	:	:	S	:	32	:	2+	6
34.	L.S. No.3	:	S	2	2	:	:	S	17

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION
BELTSVILLE, MARYLAND 20785

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Board of Regents, Univ. of Nebraska USDA/Agricultural Research Service	FOR OFFICIAL USE ONLY PVPO NUMBER 8500052
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Lincoln, NE 68583 Washington, DC 20250	VARIETY NAME OR TEMPORARY DESIGNATION Siouxland

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____ 1 = SOFT 3 = OTHER (Specify) _____
2 = HARD

1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

N/A FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
 NO. OF DAYS LATER THAN Regional Data 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH
 CM. TALLER THAN
 CM. SHORTER THAN Regional Data 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 = YELLOW 2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT Waxy bloom: 1 = ABSENT 2 = PRESENT
 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT Internodes: 1 = HOLLOW 2 = SOLID
 NO. OF NODES (Originating from node above ground) CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED Flag leaf: 1 = NOT TWISTED 2 = TWISTED
3 = OTHER (Specify): _____
 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
 MM. LEAF WIDTH (First leaf below flag leaf) CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:

- ☐ 3 Density: 1 = LAX 2 = DENSE 3 = middense ☐ 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) _____
- ☐ 4 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED
- ☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____
- ☐ 0 ☐ 8 CM. LENGTH actual 7.6 ☐ 0 ☐ 9 MM. WIDTH actual 9.2

12. GLUMES AT MATURITY:

- ☐ 1 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
3 = LONG (CA. 9 mm.) ☐ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
3 = WIDE (CA. 4 mm.)
- ☐ 1 1 = glabrous 2 = pubescent
☐ 4 Shoulder 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE
to rounded ☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE
very short 1.7 mm

13. COLEOPTILE COLOR:

- ☐ 1 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

- ☐ 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

- ☐ 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

- ☐ 3 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL ☐ 1 Cheek: 1 = ROUNDED 2 = ANGULAR
- ☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG ☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED
- ☐ Phenol reaction 1 = IVORY 2 = FAWN 3 = LT. BROWN
(See instructions): 4 = BROWN 5 = BLACK
- ☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____
- ☐ 0 ☐ 6 actual 6.3 ☐ 0 ☐ 3 actual 2.8 ☐ 3 ☐ 0 GM. PER 1000 SEEDS
MM. LENGTH MM. WIDTH

17. SEED CREASE: shallow and narrow--similar to Scout 66

- ☐ Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
2 = 80% OR LESS OF KERNEL 'CHRIS'
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
- ☐ Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
2 = 35% OR LESS OF KERNEL 'CHRIS'
3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = moderately resistant

- ☐ 3 STEM RUST (Races) all races ☐ 2 LEAF RUST (Races) field reaction ☐ 3 STRIPE RUST (Races) 2 field tests ☐ 0 LOOSE SMUT
- ☐ 2 POWDERY MILDEW tested ☐ 0 BUNT ☐ 1 OTHER (Specify) soilborne mosaic virus
wheat streak mosaic virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

- ☐ 0 SAWFLY ☐ 0 APHID (Bydv.) ☐ 1 GREEN BUG ☐ 0 CEREAL LEAF BEETLE
- ☐ OTHER (Specify) _____ HESSIAN FLY ☐ 1 GP ☐ 0 A ☐ 0 B ☐ 0 C
RACES: ☐ 0 D ☐ 0 E ☐ 0 F ☐ 0 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Scout 66	Seed size	Scout 66 (sl. smaller)
Leaf size	Scout but sl. wider & sl. shorter	Seed shape	Scout 66
Leaf color	Scout 66 but not as gray-blue	Coleoptile elongation	Scout 66
Leaf carriage	Scout 66	Seedling pigmentation	Scout 66

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

EXHIBIT D

Description of Siouxland

Glumes of Siouxland are glabrous with midwide, square to rounded shoulders. Beaks are very short. Kernels are hard, red, elliptical with a medium to large germ. The brush is medium long and not collared. Cheeks are rounded, and the crease is narrow and shallow, similar to those of Scout 66.

Table 2. Spike and kernel measurements of Scout 66 and Siouxland.

	Spike length	Spike width	Awn length	Beak length	Glume length	Glume width	Kernel length	Kernel width	1000- KW
	cm	mm	cm	mm	mm	mm	mm	mm	grams
Scout 66	7.1	8.1	6.2	2.2	7.9	3.7	6.5	2.7	32
Siouxland	7.6	9.2	6.9	1.7	6.9	3.7	6.3	2.8	30

CHEMICAL, MILLING, AND BREAD-MAKING DATA FOR THE
SOUTHERN REGIONAL PERFORMANCE NURSERY COMPOSITES OF HARD WINTER WHEAT VARIETIES
HARVESTED IN NEW MEXICO, TEXAS, OKLAHOMA, MISSOURI, KANSAS,
COLORADO, IOWA, NEBRASKA, AND SOUTH DAKOTA
IN 1982

K. F. Finney, M. D. Shogren, L. C. Bolte,
B. M. Eichman, M. S. Caley, and M. H. Klinker

Chemical, milling, and baking data for the Southern Regional Performance Nursery composites of hard winter wheat progenies harvested in 1982 are given in Table I. Mixograms of 10-g flour samples are reproduced in Figures 1 and 2.

Each variety characterized and evaluated was a composite of equal amounts of grain from Clovis (dryland and irrigated), NM; Bushland (dryland and irrigated), TX; Altus, Lahoma, and Goodwell, OK; Columbia, MO; Hutchinson, Garden City, Hays, and Colby, KS; Burlington, Akron, and Julesburg, CO; Ames, IA; Mead, North Platte, and Sidney, NE; and Highmore, SD.

The first criterion for the evaluation of bread wheat flours is that they contain at least 10.0 to 10.5% protein, and preferably 11.0 to 11.5% or higher. Protein content of flour cannot be too high for testing, but it certainly can be too low for meaningful and unqualified evaluations. The application of sufficient nitrogen as late as feasible in the spring should insure sufficiently high wheat and flour protein contents.

When producing a continuous phase of protein during mixing, protein content becomes increasingly limiting as it decreases below about 12%, so that mixing time increases as protein content decreases below about 12%. Thus, when flour protein content is below 12%, mixing time in Table I has been decreased about 12% for each 1% of protein below 12% before comparing mixing times of varieties.

Eagle and Centurk type varieties have medium-long to long mixing requirements and other strong physical dough properties, which make them excellent for blending with weak wheats, providing they have sufficient protein. It would be undesirable, however, to have a major portion of the total hard winter wheat acreage planted to those strong-type wheats, especially since the acreage planted to wheats of mellow dough properties has materially decreased in recent years. Thus, as a caution, mixing times of those types usually are labeled as questionably (Q) long. Mixing times materially longer than those of Centurk and Eagle usually are labeled as "Q-U" or "U."

We did not have Eagle or Centurk as a control. Their mixing times usually are about 70% longer than that of Scout 66; 70% of $3\frac{1}{2}$ equals about 2.2 min, and $3\frac{1}{2}$ plus 2.2 = about 5.3 min. Thus, mixing times equal to $5\frac{1}{2}$ ± about $\frac{2}{3}$ min are labeled as Q. If there were mixing times materially greater than $5\frac{1}{2}$ min, they would be labeled as Q-U or U.

Loaf volume potentials at 11.5% flour protein content vary from questionable (IL77-4259) to excellent. The mixing properties of TX78V3630, TX80A5879, TX71A562-6, NK77W4093, IL76-3845, and IL77-4259 vary from Q-short to U-short. Flour ash content of TX80A5879 is Q-high. Flour absorptions of TX71A562-6 and IL76-3845 are Q-low.

OK79257 has somewhat better overall functional properties than those of the other two progenies involving Aurora.

OK754615A, OK754615E, TX79A2729, TX78V2408, TX78AV3098, TXGH2875, CO786741, CO796272, CO796326, CO796386, NK77W4505, NE77682, NE78668, NA-361 S5, NA3679, W-391SH, W-391R11, and RH790610(HW1010) have promising overall functional properties.

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April 1983

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Table I. Chemical, Milling, and Bread-Making Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. 1/ 2/

Variety	C.I. or Sel. No.	Wheat				Flour				Bake Mix Time ^{3/}				Loaf Volume	
		Wt. Per Bu.	Ash %	Pro- tein %	Flour Yield %	Ash %	Pro- tein %	Ab- sorp- tion %	As Rec'd	Protein Basis	12.0%	As Rec'd	Protein Basis	11.5%	Protein Basis
Kharkof	1442	59.4	1.64	13.6	73.3	0.42	12.3	58.0	3½	-	-	960	903	903	
Scout 66	13996	60.9	1.44	12.5	77.3	.42	11.7	58.3	3½	3½		913	899	899	
Sage	17277	60.9	1.50	13.0	74.2	.39	11.8	58.9	3½	3½		905	884	884	
Ey Sdy/Ncm	OK754615A	60.9	1.63	12.3	76.3 4/	.45	11.4	57.4	5½	4½ Q		964	972 5/	972 5/	
" "	OK754615E	60.9	1.59	12.5	75.3	.42	11.4	58.9	5½	4½ Q		945	953 5/	953 5/	
Aurora/2*TAM W-101	OK79257	59.7	1.55	12.9	75.7	.43	11.7	60.5	2½	2½		935	920	920	
" "	OK79256	60.4	1.52	12.8	75.7	.42	11.7	60.5	2½	2½		918	904	904	
" "	OK79259	60.2	1.57	12.8	76.5	.42	11.8	59.4	2½	-		910	889	889	
TAM W-103/KS73167	TX79A2729	60.3	1.52	12.2	74.8	.44	11.3	58.9	3½	3½		939	954 5/	954 5/	
Sdy sib/KAW(TX62A2522-1)//Ctk	TX78V3630	60.2	1.52	12.5	74.3	.45	11.4	58.6	1½	1½ U		907	914	914	
TAM W-101/Ctk(TX71A58-3)															
//Amigo	TX80A5879	60.5	1.59	11.8	71.7	.49 Q	11.0	60.4	2½	2½ Q		893	930	930	
Sh Wh/Sut(TX69A509-2)//Fox	TX78V2408	58.9	1.55	12.3	74.9	.44	11.1	58.8	4½	3½		923	954 5/	954 5/	
TAM W-101/Ctk(TX71A58-3)															
//Amigo	TX80A5904	59.5	1.57	11.8	73.9	.45	10.6	56.9	3½	2½		903	974	974	
Sdy sib/Triumph//Ctk	TX71A562-6-28	58.5	1.53	11.8	75.4	.42	10.8	54.4 Q	2½	2½ Q		878	930	930	
Era/TAM W-101	TX78AV3098	59.6	1.49	13.0	77.4	.48	12.0	58.6	4½	-		967	930 5/	930 5/	
TAM 105*4/Amigo	TXGH2875	59.5	1.43	12.0	75.7	.43	11.2	61.2	4½	4		963	987 5/	987 5/	
Arkan	KS79H69	59.2	1.51	13.0	76.0	.45	12.0	56.9	3½	-		993	955	955	
72F30620/Baca	CO786741	60.9	1.54	12.8	77.2	.42	11.9	58.6	3½	-		940	911 5/	911 5/	
CO723117/CO725856	CO796272	61.3	1.44	12.0	75.9	.39	11.1	58.6	4½	3½		893	922 5/	922 5/	
" "	CO796326	61.4	1.47	12.2	76.8	.39	11.2	58.8	5	4½		913	935 5/	935 5/	
" "	CO796386	61.6	1.51	12.6	76.0	.39	11.7	59.0	4½	4½		970	955 5/	955 5/	

Table I. (cont.) page 2

Variety	C.I. or Sel. No.	Wheat			Flour			Bake Mix Time ^{3/}			Loaf Volume		
		Wt. Per Bu.	Ash %	Pro- tein %	Flour Yield %	Ash %	Pro- tein %	Ab- sorp- tion %	As Rec'd min	12.0% Protein Basis min	As Rec'd cc	11.5% Protein Basis cc	
Scout*5/Ag//Sdy/3/Ctk	NK77W4093	60.9	1.52	12.8	73.9 4/	0.42	11.7	59.6	2 3/8	2 1/2 Q-U	938	923	
Scout*5/Ag//Sdy	NK77W4505	59.9	1.56	13.2	75.7	.44	12.2	57.8	4 1/4	-	960	910 5/	
Kavkaz/Centurk	NK77W4593	60.7	1.56	13.5	75.5	.42	12.6	57.6	3 1/4	-	955	880	
Wrr*5/Agent//NE68457/31Ctk78	NE77682	59.9	1.43	12.9	74.7	.41	11.8	58.7	4 1/4	4 1/8	915	894 5/	
(Wrr*5/Agent)*2/Kavkaz 'S. Caucasus'	NE78668	60.4	1.50	12.5	75.8	.40	11.5	58.3	3 3/8	3 3/8	910	910 5/	
Sn/Tpr//Wrr/31I18889/Tpr													
//CO652643	NA-361 S5	60.3	1.50	12.1	76.2	.40	10.9	58.6	4 1/4	3 1/4	918	965 5/	
CIMMYT/CO652643//Lcr/3/													
KS62/CO695552	NA-3679	61.1	1.55	12.0	74.9	.40	10.8	57.1	3 3/8	2 1/2	908	963 5/	
I118889/Tpr/CO652643/31Baca	W-391SH	57.5	1.50	12.3	74.5	.43	11.1	57.1	4 1/8	4 1/8	895	924 5/	
" " " " "	W-391R11	59.8	1.52	12.1	76.4	.43	11.2	57.9	5 1/4	5 Q	868	889 5/	
Sage Outcross	LS No. 3	61.6	1.57	13.2	76.9	.39	12.1	57.6	3	-	928	887	
Ctk//KS6623/TX62A2522-8-2	IL76-3845	59.2	1.49	12.6	76.2	.42	11.7	55.3 Q	2 1/4	2 1/4 Q	892	878	
Kavkaz/TX69A330-1	IL77-4259	60.6	1.53	13.6	75.3	.43	12.6	57.5	1 1/4 U	-	914	844 Q-S	
HW1010	RH790610	60.4	1.52	12.2	75.1	.39	11.2	59.4	3 1/4	3 1/4	945	969 5/	

1/ Data expressed on a 14% moisture basis.

2/ S, Q, and U - Satisfactory, questionable, and unsatisfactory quality with respect to property in question.

A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating, in general, characterizes a variety as undesirable for hard wheat milling and breadmaking purposes. Crumb grains and colors were satisfactory for all entries except for the Q-S crumb grains of TX78V3630 and NK77W4593, and the Q crumb grain and color of IL77-4259.

3/ Mixing time used in baking is evaluated in conjunction with other mixing properties obtained from the 10-g mixogram.

4/ Softer than average hard wheat milling properties but entirely satisfactory.

5/ Promising overall functional (milling and bread-making) properties.

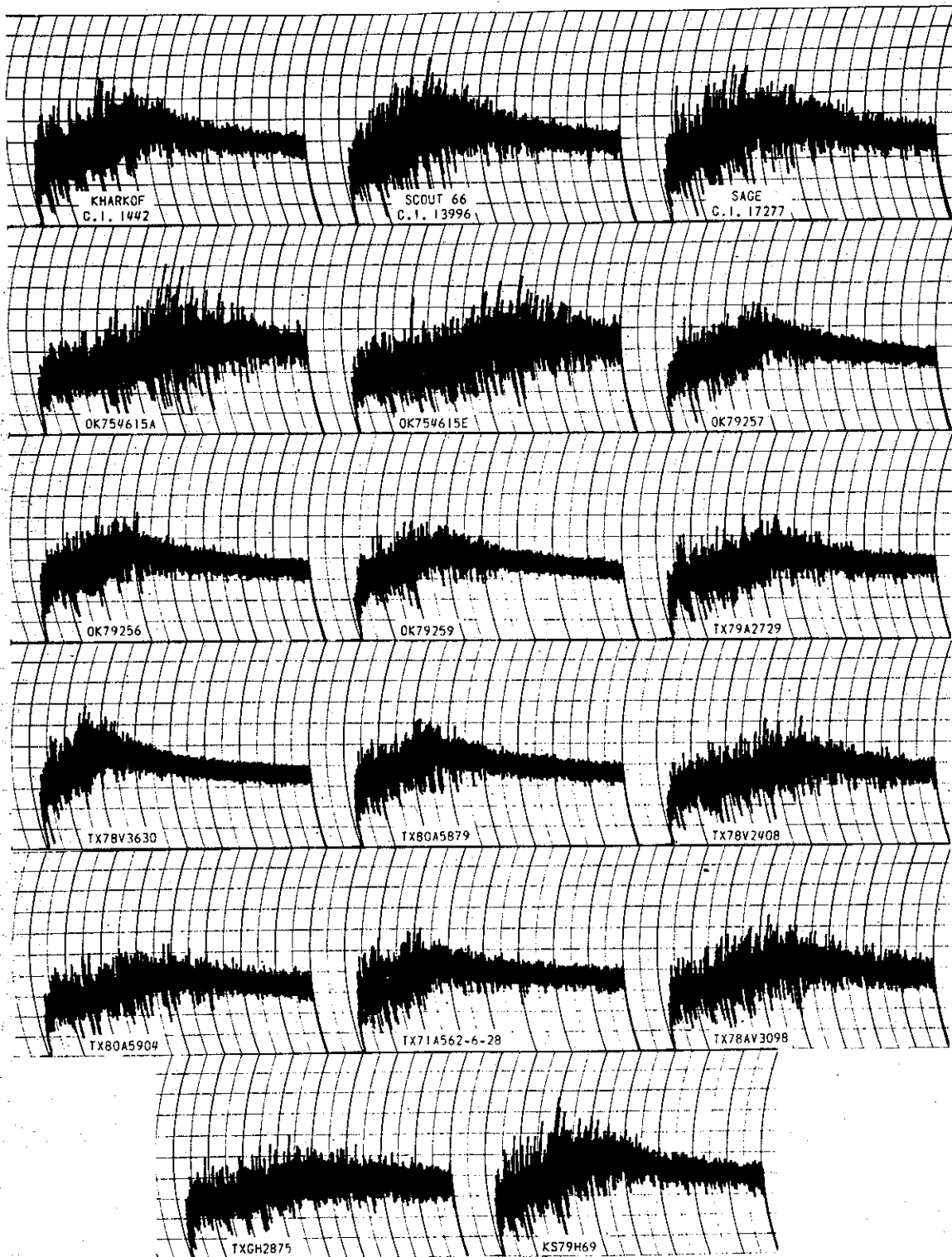


Fig. 1. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

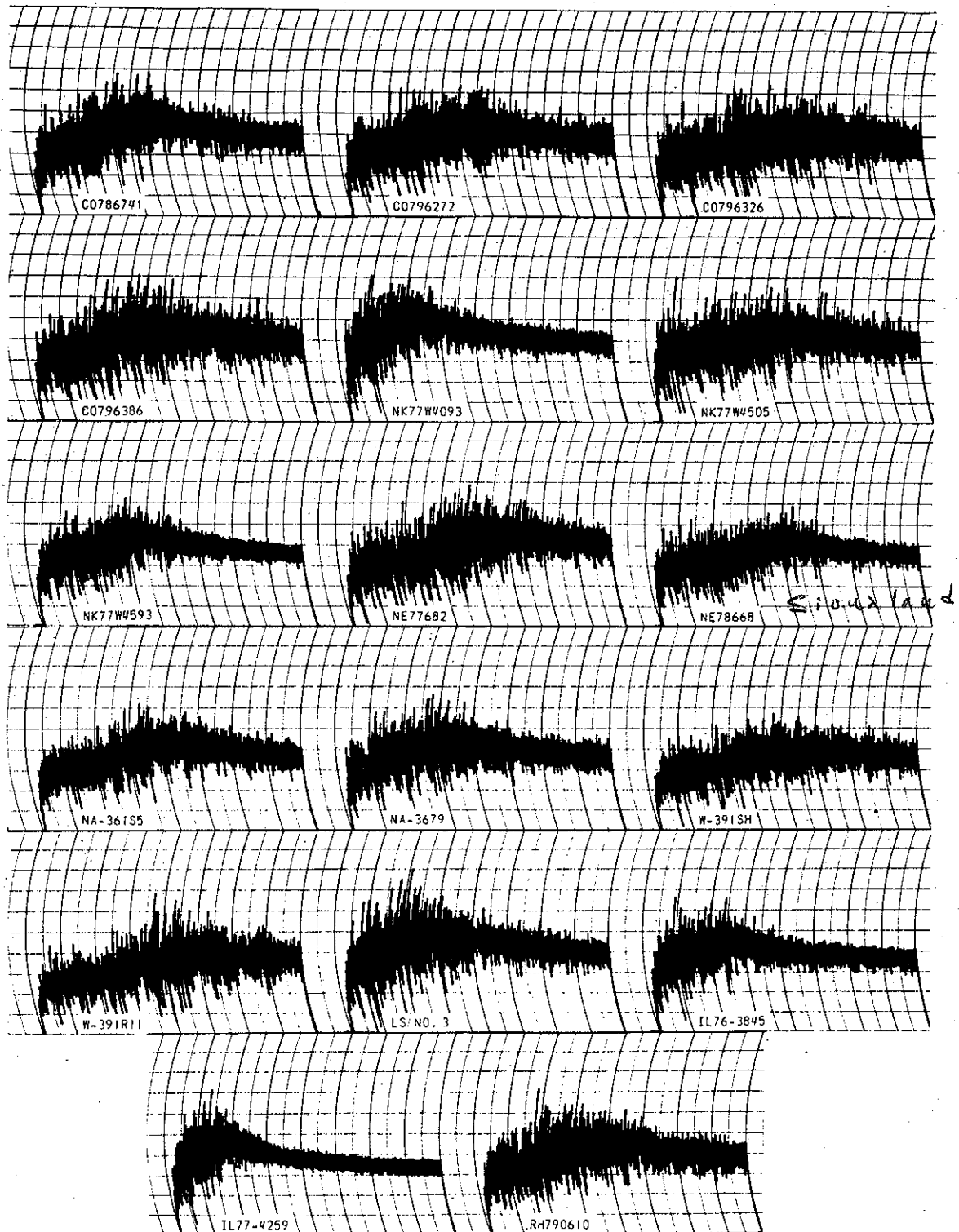


Fig. 2. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in New Mexico, Texas, Oklahoma, Missouri, Kansas, Colorado, Iowa, Nebraska, and South Dakota in 1982. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

CHEMICAL, MILLING, AND BREAD-MAKING DATA FOR THE SOUTHERN REGIONAL PERFORMANCE
NURSERY COMPOSITES OF HARD WINTER WHEAT VARIETIES HARVESTED IN COLORADO,
IDAHO, IOWA, KANSAS, MISSOURI, NEBRASKA, NEW MEXICO, OKLAHOMA,
SOUTH DAKOTA, AND TEXAS IN 1983

M. D. Shogren, L. C. Bolte, B. M. Eichman,
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Chemical, milling, and baking data for the Southern Regional Performance Nursery composites of hard winter wheat progenies harvested in 1983 are given in Table 1. Mixograms of 10-g flour samples are reproduced in Figures 1 and 2.

Each variety characterized and evaluated was a composite of equal amounts of grain from Ft. Collins, CO; Aberdeen, ID; Ames, IA; Colby, KS; Columbia, MO; Clay Center and North Platte, NE; Clovis (dryland and irrigated), NM; Altus, Goodwell, and Lahoma, OK; Brookings, Highmore, and Presho, SD; and Dallas and Vernon, TX.

Bread wheat flour can best be evaluated if it contains 11.0% protein or higher. At lower protein levels mixing time, baking absorption, and loaf volume corrections are increased and subjective measurements are less clear and concise. The application of sufficient nitrogen as late as feasible in the spring should insure sufficiently high wheat and flour protein contents.

When producing a continuous phase of protein during mixing, protein content becomes increasingly limiting as it decreases below about 12%, so that mixing time increases as protein content decreases below about 12%. The resultant mixing time is therefore not characteristic of the variety at protein levels of 12% and higher. Therefore, when flour protein contents were below 12%, mixing times in Table 1 were decreased 12% for each 1% of protein below 12% before comparing mixing times of varieties.

Eagle and Centurk varieties have medium-long to long mixing requirements and other strong physical dough properties, which make them excellent for blending with wheats having weak physical dough properties, providing they have sufficient protein. It would be undesirable to have a major portion of the total hard winter wheat acreage planted to those strong-type wheats. Likewise it would be undesirable to have a major portion of the total acreage planted to varieties having weak physical dough properties. Therefore, varieties having mixing times which are too long or too short are labeled questionable or unsatisfactory.

Loaf volume potentials (at 12.0% flour protein content) varied from questionable (NK77W4593, NE80413, OK79257, OK80019, and IL77-4259) to excellent.

The mixing properties of TXV3630, TX71A562-6-28, NK77W4093, NA80300, TX80GH3006, OK79257, OK79256, OK80019, OK80268, IL76-3845, and IL77-4259 varied from Q-S to U. Flour absorption of TX71A562-6-28 was questionably low.

Crumb grains of TXV3630, TX71A562-6-28, and OK79256 were questionable to satisfactory, OK80019 was questionable, and TX80GH3006 was questionable to unsatisfactory.

Experimentals with promising overall functional properties are so noted.

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July 1984

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NEBRASKA

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P. T. Nordquist
J. W. Schmidt

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R. E. Finkner
C. R. Glover
E. J. Gregory
R. F. Hooks
C. H. Hsi
K. J. Lessman
M. H. Niehaus

NORTH DAKOTA

J. F. Carter
T. J. Conlon
T. C. Faller
E. W. French
R. C. Frohberg
H. R. Lund
N. R. Riveland
P. G. Sebesta
G. S. Smith

OKLAHOMA

C. B. Browning
R. L. Burton
L. I. Croy
R. W. Foraker
F. J. Gough
F. E. LeGrand
O. G. Merkle
J. C. Murray
H. Pass
R. A. Peck
P. W. Santelmann
E. E. Sebesta
R. J. Sidwell
E. L. Smith
K. J. Starks
B. B. Tucker
J. A. Webster
H. C. Young, Jr.

SOUTH DAKOTA

G. W. Buchenau
D. D. Dearborn
W. S. Gardner
H. A. Geise
J. Gellner
M. L. Horton
R. A. Moore
M. R. Volek

TEXAS

M. E. Bloodworth
L. E. Clark
N. P. Clarke
N. E. Daniels
J. H. Gardenhire
E. C. Gilmore
H. O. Kunkel
K. B. Porter
L. W. Rooney
E. C. Runge
W. D. Worrall

WASHINGTON

L. L. Boyd
E. Donaldson
J. C. Engibous

WYOMING

G. L. Costel
B. J. Kolp
L. I. Painter
W. G. Siedow
H. J. Tuma

Table 1. Chemical, Milling, and Bread-Making Data for the Southern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas in 1983. 1/ 2/

Variety	C.I. or Sel. No.	Wheat			Flour			Dough Mix Time ^{3/}			Loaf Volume		
		Wt. Per Bu.	Ash %	Pro- tein %	Flour Yield %	Ash %	Pro- tein %	Ab- sorp- tion %	As Rec'd	Corrected to 12.0% Protein	As Rec'd	Corrected to 12.0% Protein	
		lbs							min	min	cc	cc	
Kharkof	1442	58.6	1.71	13.1	71.0	0.44	12.0	56.6	3½	-	953	953	
Scout 66	13996	60.7	1.55	13.1	74.2	.41	12.1	56.0	3½	-	943	936	
Sage	17277	60.1	1.61	13.8	74.1	.42	12.6	56.4	3½	-	950	909	
Sdy Sib/Kaw (TX62A2522-1)/2/Ctk	TXV3630	60.0	1.58	12.7	72.1 4/	.45	11.5	54.0	2½	2½ Q	902	937	
Short Wheat/Sut (TX69A509-2)/2/Fox	TX78V2408	59.0	1.57	12.4	74.3	.45	11.5	54.7	4½	3½	920	956 5/	
Sdy Sib/Triumph /2/Ctk	TX71A562-6-28	58.1	1.59	12.0	75.5 4/	.45	11.1	51.5 Q	3½	2½ Q-S	860	922	
Tam 105*4/Amigo	TXGH2875	59.2	1.47	12.1	75.7 4/	.44	11.2	56.8	4½	3½	965	1030 5/	
Arkan	KS79H69	60.0	1.57	13.3	76.7	.46	12.2	54.4	3½	-	933	919	
Scout*5/Ag/2/ Sdy/3/Ctk	NK77W4093	61.2	1.57	13.0	73.2	.46	12.0	55.2	2½ Q	-	935	935	
Scout*5/Ag/2/Sdy	NK77W4505	60.3	1.59	13.3	74.4	.49	12.5	56.5	4½	-	987	951 5/	
Kavkaz/Centurk	NK77W4593	60.8	1.64	13.7	74.8	.45	12.8	54.7	3½	-	940	888 Q	
Centura	NE77682	60.3	1.56	13.1	76.4	.47	12.2	55.9	4½	-	935	921	
(Wrr*5/Agent)*2/Kavkaz	NE78668	60.2	1.59	12.6	75.9	.47	11.9	54.9	3½	3½	918	925 5/	
Lovrin 13/2*Cntk 78	NE80413	60.4	1.65	12.8	74.3	.47	11.7	54.8	3½	3½	873	893 Q	
Colt	NE78696	60.2	1.66	12.6	74.0	.44	11.8	53.4	3½	3½	923	937	
CO73F18298-6/ McNair 4823	NA80137	60.1	1.64	13.0	71.5 4/	.44	11.6	55.4	3½	3½	918	947 5/	
Bulk Sel.	NA80310	58.2	1.60	13.0	75.3	.46	12.1	55.7	5½	-	927	920 5/	
Bulk Sel.	NA80300	59.6	1.62	12.6	74.5	.47	11.8	56.9	6	5½ Q	942	957	
Caprock/B86/2/SC3212	W7442B	61.1	1.68	12.9	75.0	.47	11.9	53.9	3½	3½	973	981 5/	
Sturdy/B48/2/Sturdy	W7452B	59.9	1.69	12.7	73.7 4/	.54	12.6	55.0	3½	-	995	952 5/	
Tam 105 Resel.	TX69A569-1-69	59.5	1.53	12.1	70.3 4/	.41	10.8	55.5	4½	3½	917	1012	

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Table 1. (cont.) page 2

Variety	C.I. or Sel. No.	Wt. Per Bu.	Wheat			Flour			Dough Mix Time ^{3/}		Loaf Volume	
			Ash	Pro- tein	Flour Yield	Ash	Pro- tein	Ab- sorp- tion	As Rec'd	Corrected to 12.0% Protein	As Rec'd	Corrected to 12.0% Protein
			%	%	%	%	%	%	min	min	cc	cc
Tam W-103/2/Sh Wheat/ Sut(TX69A509-1)	TX80A5609	57.5	1.60	11.8	73.1	0.44	10.6	53.0	4½	3½	865	969
Sdy Sib/Tcs/2/Ctk (73A2694)/3/Amigo	TX80A6025	60.2	1.66	11.8	73.3	.57	10.6	54.2	4½	3½	880	987
Tam 105*4/Amigo	TX80GH2679	60.2	1.51	12.4	72.9	.47	11.2	56.8	3½	3½	918	978
Sdy Sib/Tmp/2/Ctk (TX71A562-6)	TX80GH3006	58.7	1.60	12.1	72.5	.50	11.1	53.7	2½	2½ Q	870	933
*4/Amigo	OK754615E	61.5	1.68	12.0	73.6	.46	10.8	54.2	4½	4½	940	1039
Chisolm	OK79257	61.0	1.64	13.1	76.0	.49	12.1	56.7	2½ Q	-	898	891 Q
Aurora/2*Tam W-101	OK79256	61.0	1.66	12.8	74.5	.47	11.9	54.9	2½	2½ Q-S	900	907
Aurora/2*Taw W-101	OK80019	61.3	1.67	12.7	74.0	.57	11.7	54.8	2½	2½ U	865	884 Q
Payne/Amigo	OK80268	61.1	1.71	13.5	74.5	.52	12.6	56.4 Q-S	2½	-	950	909
Payne/2/Tam W-101/Amigo	CO796326	61.2	1.61	12.3	74.9	.44	11.4	57.7	4½	4	918	962 5/
CO723117/CO725856	CO796386	61.3	1.59	12.6	73.6	.40	11.5	57.4	4½	4½	953	991 5/
CO723117/CO725856	RH790610	60.1	1.62	12.2	74.1	.42	11.4	55.5	4½	3½	916	960 5/
HWY Hybrid												
Ctk/2/KS6623/												
TX62A2522-8-2	IL76-3845	59.1	1.63	12.5	74.3	.42	11.7	53.4	2½	2½ Q-U	897	918
Kavkaz/TX69A330-1	IL77-4259	61.0	1.61	14.0	74.8	.45	13.2	55.6	2 U	-	930	856 Q

1/ Data expressed on a 14% moisture basis.

2/ S, Q, and U = Satisfactory, questionable, and unsatisfactory quality with respect to property in question.

A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating characterizes a variety as undesirable for hard winter wheat milling and breadmaking purposes.

3/ Mixing time used in baking is evaluated in conjunction with other mixing properties obtained from the 10-g mixogram.

4/ Softer than average hard wheat milling properties but entirely satisfactory.

5/ Promising overall functional milling and bread-making properties.

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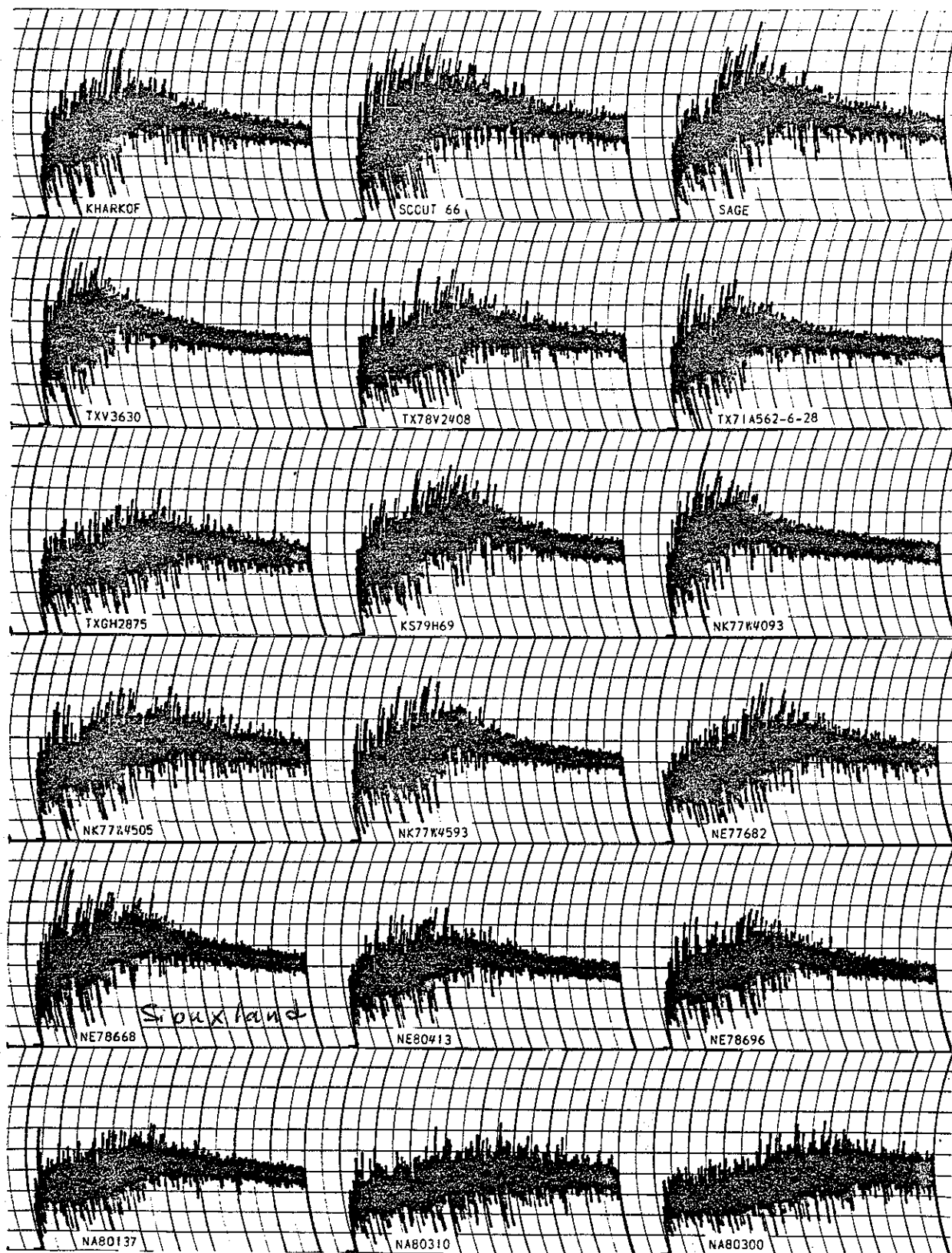


Fig. 1. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas in 1983. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

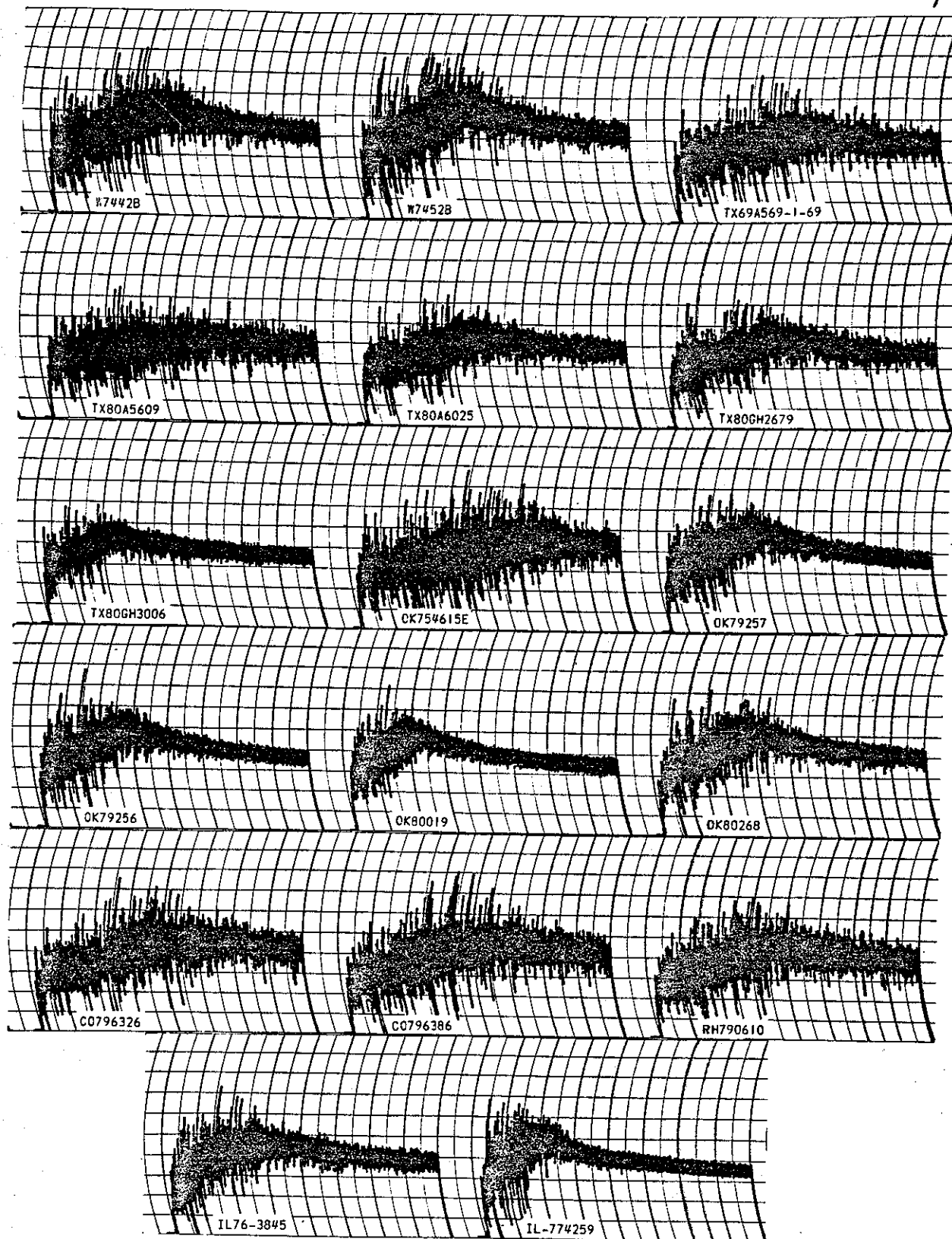


Fig. 2. Mixograms (10 g of flour) for the Southern Regional Performance Nursery composites of hard winter wheat varieties harvested in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas in 1983. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

EXHIBIT E

Statement of the Basis of the Applicant's Ownership

Siouxland hard red winter wheat is a product of the cooperative state-federal breeding program located in the Nebraska Agricultural Experiment Station. The breeders were Dr. John W. Schmidt and Dr. Virgil A. Johnson, employees of the Nebraska AES (Department of Agronomy) and the USDA/Agricultural Research Service (stationed and functioning also as a staff member in the Department of Agronomy), respectively.

By established policy, release of cultivars developed by the Nebraska AES is the responsibility of the Nebraska AES as the agency providing staff, funds, and facilities for the breeding program.

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United States
Department of
Agriculture

Agricultural
Marketing
Service

Livestock, Meat,
Grain, and
Seed Division

National Agricultural
Library Building
Beltsville, MD. 20705

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 8500052
Variety and Kind: 'Siouxland' Wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived, except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

NEBRASKA AGRICULTURAL EXPERIMENT STATION

AGRICULTURAL RESEARCH SERVICE, USDA

3/7/85
(Date)

Dale F. Vanderhoef
(Signature)

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is an agency of the
United States Department of Agriculture